

THAT WHICH IS CLAIMED:

1. A method of analyzing a workload schedule for a complex process with respect to resources available therefor, said method comprising:
  - 5 identifying a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;
  - determining a hands-on work time required for each task, the tasks including a task requiring a greatest hands-on work time;
  - 10 determining an effort equivalence for each task by normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time;
  - defining a calendar having intervals;
  - arranging the projects according to the start date and the cycle time and with respect to the calendar such that each task is at least partially performed in one of the intervals;
  - 15 determining an effort equivalence apportionment for the intervals corresponding to the tasks at least partially performed in respective intervals;
  - determining a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;
  - 20 comparing the total effort equivalence for each interval to a historical maximum effort equivalence volume so as to evaluate the workload schedule with respect to the available resources; and
  - 25 modifying the projects, where the total effort equivalence for an interval exceeds the historical maximum effort equivalence volume, so as to reapportion the total effort equivalences such that the total effort equivalence for each interval is no greater than the historical maximum effort equivalence volume, and thereby providing a relatively more efficient utilization of the available resources with respect to the workload schedule.
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2. A method according to Claim 1 wherein modifying the projects further comprises modifying the arrangement of the projects with respect to the calendar so as to reapportion the total effort equivalences across the intervals.

3. A method according to Claim 1 wherein modifying the projects further comprises modifying the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the historical maximum effort equivalence volume.

4. A method according to Claim 1 wherein defining a calendar further comprises defining a calendar extending for a period corresponding to the workload schedule.

5. A method according to Claim 1 wherein determining a hands-on work time required for each task further comprises determining a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

6. A method according to Claim 1 wherein determining a hands-on work time required for each task further comprises determining a hands-on work time required for each task by performing a single representative time measurement of the hands-on work required for each task.

7. A method according to Claim 1 wherein determining an effort equivalence for each task further comprises normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time to provide a corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

8. A method according to Claim 1 wherein the historical maximum effort equivalence volume is determined by comparing the total effort equivalence for a corresponding interval in a previous calendar to a management evaluation of at least one of staff performance, resource availability, and work output quality for the corresponding interval in the previous calendar, the total effort equivalence for the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

9. A method according to Claim 1 further comprising, where the total effort equivalence for an interval does not exceed the historical maximum effort equivalence volume, maintaining the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

10. A method according to Claim 1 further comprising determining a cost per effort equivalence by dividing an outsourcing cost for each task by the respective effort equivalence required for each task.

11. A method according to Claim 10 further comprising determining an outsourcing cost for a comparison interval by multiplying an actual accrued effort equivalence volume per task over the comparison interval by the cost per effort equivalence for the respective task.

12. A method according to Claim 11 further comprising determining a relative cost-value by comparing the outsourcing cost for the comparison interval to a corresponding total internal cost for the respective task over the comparison interval.

13. A system for analyzing a workload schedule for a complex process with respect to resources available therefor, said system comprising:  
a computer device comprising:

a first processing portion configured to identify a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;

a second processing portion configured to determine a hands-on work time required for each task, the tasks including a task requiring a greatest hands-on work time;

a third processing portion configured to determine an effort equivalence for each task by normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time;

a fourth processing portion configured to define a calendar having intervals;

a fifth processing portion configured to arrange the projects according to the start date and the cycle time and with respect to the calendar such that each task is at least partially performed in one of the intervals;

a sixth processing portion configured to determine an effort equivalence apportionment for the intervals corresponding to the tasks at least partially performed in respective intervals;

a seventh processing portion configured to determine a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;

an eighth processing portion configured to compare the total effort equivalence for each interval to a historical maximum effort equivalence volume so as to evaluate the workload schedule with respect to the available resources; and

a ninth processing portion configured to direct the modification of the projects, where the total effort equivalence for an interval exceeds the historical maximum effort equivalence volume, so as to reapportion the total effort equivalences such that the total effort

equivalence for each interval is no greater than the historical maximum effort equivalence volume, and thereby providing a relatively more efficient utilization of the available resources with respect to the workload schedule.

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14. A system according to Claim 13 wherein the ninth processing portion is further configured to direct the modification of the arrangement of the projects with respect to the calendar so as to reapportion the total effort equivalences across the intervals.

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15. A system according to Claim 13 wherein the ninth processing portion is further configured to direct the modification of the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the historical maximum effort equivalence volume.

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16. A system according to Claim 13 wherein the fourth processing portion is further configured to define a calendar extending for a period corresponding to the workload schedule.

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17. A system according to Claim 13 wherein the second processing portion is further configured to determine a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

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18. A system according to Claim 13 wherein the second processing portion is further configured to determine a hands-on work time required for each task by directing a performance of a single representative time measurement of the hands-on work required for each task.

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19. A system according to Claim 13 wherein the third processing portion is further configured to normalize each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time to provide a

corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

5           20.     A system according to Claim 13 further comprising a tenth processing portion configured to determine the historical maximum effort equivalence volume by comparing the total effort equivalence for a corresponding interval in a previous calendar to a management evaluation of at least one of staff performance, resource availability, and work output quality for the corresponding interval in the previous calendar, the total  
10 effort equivalence for the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

          21.     A system according to Claim 13 wherein the ninth processing portion is further configured, where the total effort equivalence for an interval does not exceed the  
15 historical maximum effort equivalence volume, to direct the maintenance of the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

          22.     A system according to Claim 13 further comprising an eleventh processing  
20 portion configured to determine a cost per effort equivalence by dividing an outsourcing cost for each task by the respective effort equivalence required for each task.

          23.     A system according to Claim 22 further comprising a twelfth processing portion configured to determine an outsourcing cost for a comparison interval by  
25 multiplying an actual accrued effort equivalence volume per task over the comparison interval by the cost per effort equivalence for the respective task.

          24.     A system according to Claim 23 further comprising a thirteenth processing portion configured to determine a relative cost-value by comparing the outsourcing cost  
30 for the comparison interval to a corresponding total internal cost for the respective task over the comparison interval.

25. A computer software program product capable of being executed within a computer device, the computer software program product for analyzing a workload schedule for a complex process with respect to resources available therefor, said computer software program product comprising:

- 5 a first executable portion capable of identifying a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;
- a second executable portion capable of determining a hands-on work time required for each task, the tasks including a task requiring a greatest  
10 hands-on work time;
- a third executable portion capable of determining an effort equivalence for each task by normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time;
- a fourth executable portion capable of defining a calendar having intervals;
- 15 a fifth executable portion capable of arranging the projects according to the start date and the cycle time and with respect to the calendar such that each task is at least partially performed in one of the intervals;
- a sixth executable portion capable of determining an effort equivalence apportionment for the intervals corresponding to the tasks at least partially  
20 performed in respective intervals;
- a seventh executable portion capable of determining a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;
- 25 an eighth executable portion capable of comparing the total effort equivalence for each interval to a historical maximum effort equivalence volume so as to evaluate the workload schedule with respect to the available resources; and
- a ninth executable portion capable of directing the modification of the projects, where the total effort equivalence for an interval exceeds the historical  
30 maximum effort equivalence volume, so as to reapportion the total effort equivalences such that the total effort equivalence for each interval is no

greater than the historical maximum effort equivalence volume, and thereby providing a relatively more efficient utilization of the available resources with respect to the workload schedule.

5           26.    A computer software program product according to Claim 25 wherein the ninth executable portion is further capable of directing the modification of the arrangement of the projects with respect to the calendar so as to reapportion the total effort equivalences across the intervals.

10           27.    A computer software program product according to Claim 25 wherein the ninth executable portion is further capable of directing the modification of the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the historical maximum effort equivalence volume.

15           28.    A computer software program product according to Claim 25 wherein the fourth executable portion is further capable of defining a calendar extending for a period corresponding to the workload schedule.

20           29.    A computer software program product according to Claim 25 wherein the second executable portion is further capable of determining a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

25           30.    A computer software program product according to Claim 25 wherein the second executable portion is further capable of determining a hands-on work time required for each task by directing a performance of a single representative time measurement of the hands-on work required for each task.

30           31.    A computer software program product according to Claim 25 wherein the third executable portion is further capable of normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on



work time to provide a corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

5           32.     A computer software program product according to Claim 25 further comprising a tenth executable portion capable of determining the historical maximum effort equivalence volume by comparing the total effort equivalence for a corresponding interval in a previous calendar to a management evaluation of at least one of staff performance, resource availability, and work output quality for the corresponding  
10 interval, the total effort equivalence for the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

          33.     A computer software program product according to Claim 25 wherein the ninth executable portion is further capable of, where the total effort equivalence for an  
15 interval does not exceed the historical maximum effort equivalence volume, directing the maintenance of the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

          34.     A computer software program product according to Claim 25 further  
20 comprising an eleventh executable portion capable of determining a cost per effort equivalence by dividing an outsourcing cost for each task by the respective effort equivalence required for each task.

          35.     A computer software program product according to Claim 34 further  
25 comprising a twelfth executable portion capable of determining an outsourcing cost for a comparison interval by multiplying an actual accrued effort equivalence volume per task over the comparison interval by the cost per effort equivalence for the respective task.

          36.     A computer software program product according to Claim 35 further  
30 comprising a thirteenth executable portion capable of determining a relative cost-value by

comparing the outsourcing cost for the comparison interval to a corresponding total internal cost for the respective task over the comparison interval.

37. A method of analyzing productivity within a complex process with respect to a workload schedule being performed by a total production full-time equivalent (FTE) worker headcount, said method comprising:

identifying a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;

determining a hands-on work time required for each task, the tasks including a task requiring a greatest hands-on work time;

determining an effort equivalence for each task by normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time;

defining a calendar having intervals;

arranging the projects according to the start date and the cycle time and with respect to the calendar such that each task is at least partially performed in one of the intervals;

determining an effort equivalence apportionment for the intervals corresponding to the tasks at least partially performed in respective intervals;

determining a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;

determining a productivity measure for a productivity measurement period by dividing the total effort equivalence by the total production FTE worker headcount and the productivity measurement period, the productivity measurement period comprising at least a portion of an interval;

comparing the productivity measure to a productivity capacity limit over the productivity measurement period, the productivity capacity limit comprising at least a percentage of a historical maximum productivity capacity with respect to the resources available therefor, so as to evaluate

the workload schedule with respect to an empirical personnel capacity for the tasks comprising the projects; and  
modifying the projects, where the productivity measure exceeds the productivity capacity limit for the productivity measurement period, such that the productivity measure over the productivity measurement period is no greater than the productivity capacity limit so as to thereby provide a relatively more efficient utilization of the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule.

38. A method according to Claim 37 wherein comparing the productivity measure further comprises comparing the productivity measure to a productivity capacity limit, the productivity capacity limit comprising about 80 percent of the historical maximum productivity capacity, over the productivity measurement period.

39. A method according to Claim 37 further comprising determining the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule by evaluating at least one of personnel working hours, personnel morale, and project result timeliness with respect to the historical maximum productivity capacity.

40. A method according to Claim 37 wherein modifying the projects further comprises modifying the arrangement of the projects with respect to the calendar so as to reapportion the total effort equivalences across the intervals.

41. A method according to Claim 37 wherein modifying the projects further comprises modifying the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the productivity capacity limit.

42. A method according to Claim 37 wherein modifying the projects further comprises modifying the total production FTE worker headcount so as to modify the productivity measure with respect to the productivity capacity limit.

5 43. A method according to Claim 37 wherein the tasks are each performed according to a corresponding process and modifying the projects further comprises modifying the processes so as to modify the productivity measure with respect to the productivity capacity limit.

10 44. A method according to Claim 37 wherein defining a calendar further comprises defining a calendar extending for a period corresponding to the workload schedule.

15 45. A method according to Claim 37 wherein determining a hands-on work time required for each task further comprises determining a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

20 46. A method according to Claim 37 wherein determining a hands-on work time required for each task further comprises determining a hands-on work time required for each task by performing a single representative time measurement of the hands-on work required for each task.

25 47. A method according to Claim 37 wherein determining an effort equivalence for each task further comprises normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time to provide a corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

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48. A method according to Claim 37 further comprising determining the historical maximum productivity capacity by dividing the total effort equivalence over a corresponding productivity measurement period in a previous calendar by the total production FTE worker headcount performing the tasks over the corresponding interval  
5 in the previous calendar, the total effort equivalence over the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

49. A method according to Claim 37 further comprising, where the productivity measure does not exceed the productivity capacity limit for the productivity  
10 measurement period, maintaining the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

50. A system for analyzing productivity within a complex process with respect to a workload schedule being performed by a total production full-time equivalent (FTE)  
15 worker headcount, said system comprising:

a computer device comprising:

- a first processing portion configured to identify a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;
- 20 a second processing portion configured to determine a hands-on work time required for each task, the tasks including a task requiring a greatest hands-on work time;
- a third processing portion configured to determine an effort equivalence for each task by normalizing each task hands-on work time with  
25 respect to the task hands-on work time of the task requiring the greatest hands-on work time;
- a fourth processing portion configured to define a calendar having intervals;
- a fifth processing portion configured to arrange the projects according to  
30 the start date and the cycle time and with respect to the calendar

such that each task is at least partially performed in one of the intervals;

a sixth processing portion configured to determine an effort equivalence apportionment for the intervals corresponding to the tasks at least partially performed in respective intervals;

a seventh processing portion configured to determine a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;

an eighth processing portion configured to determine a productivity measure for a productivity measurement period by dividing the total effort equivalence by the total production FTE worker headcount and the productivity measurement period, the productivity measurement period comprising at least a portion of an interval;

a ninth processing portion configured to compare the productivity measure to a productivity capacity limit over the productivity measurement period, the productivity capacity limit comprising at least a percentage of a historical maximum productivity capacity with respect to the resources available therefor, so as to evaluate the workload schedule with respect to an empirical personnel capacity for the tasks comprising the projects; and

a tenth processing portion configured to direct the modification of the projects, where the productivity measure exceeds the productivity capacity limit for the productivity measurement period, such that the productivity measure over the productivity measurement period is no greater than the productivity capacity limit so as to thereby provide a relatively more efficient utilization of the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule.

51. A system according to Claim 50 wherein the ninth processing portion is further configured to compare the productivity measure to a productivity capacity limit, the productivity capacity limit comprising about 80 percent of a historical maximum productivity capacity, over the productivity measurement period.

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52. A system according to Claim 50 further comprising an eleventh processing portion configured to determine the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule by evaluating at least one of personnel working hours, personnel morale, and project result timeliness with respect to the historical maximum productivity capacity.

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53. A system according to Claim 50 wherein the tenth processing portion is further configured to direct the modification of the arrangement of the projects with respect to the calendar so as to reapportion the total effort equivalences across the intervals.

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54. A system according to Claim 50 wherein the tenth processing portion is further configured to direct the modification of the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the productivity capacity limit.

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55. A system according to Claim 50 wherein the tenth processing portion is further configured to direct the modification of the total production FTE worker headcount so as to modify the productivity measure with respect to the productivity capacity limit.

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56. A system according to Claim 50 wherein the tasks are each performed according to a corresponding process and the tenth processing portion is further configured to direct the modification of the processes so as to modify the productivity measure with respect to the productivity capacity limit.

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57. A system according to Claim 50 wherein the fourth processing portion is further configured to define a calendar extending for a period corresponding to the workload schedule.

5 58. A system according to Claim 50 wherein the second processing portion is further configured to determine a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

10 59. A system according to Claim 50 wherein the second processing portion is further configured to determine a hands-on work time required for each task by directing a performance of a single representative time measurement of the hands-on work required for each task.

15 60. A system according to Claim 50 wherein the third processing portion is further configured to normalize each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time to provide a corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

20 61. A system according to Claim 50 further comprising a twelfth processing portion configured to determine the historical maximum productivity capacity by dividing the total effort equivalence over a corresponding productivity measurement period in a previous calendar by the total production FTE worker headcount performing the tasks over the corresponding interval in the previous calendar, the total effort  
25 equivalence over the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

30 62. A system according to Claim 50 wherein the tenth processing portion is further configured, where the productivity measure does not exceed the productivity



capacity limit for the productivity measurement period, to maintain the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

63. A computer software program product capable of being executed within a computer device, the computer software program product for analyzing productivity within a complex process with respect to a workload schedule being performed by a total production full-time equivalent (FTE) worker headcount, said computer software program product comprising:

a first executable portion capable of identifying a plurality of projects comprising the complex process, each project having a start date and a cycle time and further comprising at least one task;

a second executable portion capable of determining a hands-on work time required for each task, the tasks including a task requiring a greatest hands-on work time;

a third executable portion capable of determining an effort equivalence for each task by normalizing each task hands-on work time with respect to the task hands-on work time of the task requiring the greatest hands-on work time;

a fourth executable portion capable of defining a calendar having intervals;

a fifth executable portion capable of arranging the projects according to the start date and the cycle time and with respect to the calendar such that each task is at least partially performed in one of the intervals;

a sixth executable portion capable of determining an effort equivalence apportionment for the intervals corresponding to the tasks at least partially performed in respective intervals;

a seventh executable portion capable of determining a total effort equivalence for each interval corresponding to the sum of the effort equivalence apportionment for the tasks at least partially performed in that interval;

an eighth executable portion capable of determining a productivity measure for a productivity measurement period by dividing the total effort equivalence by the total production FTE worker headcount and the productivity

measurement period, the productivity measurement period comprising at least a portion of an interval;

a ninth executable portion capable of comparing the productivity measure to a productivity capacity limit over the productivity measurement period, the productivity capacity limit comprising at least a percentage of a historical maximum productivity capacity with respect to the resources available therefor, so as to evaluate the workload schedule with respect to an empirical personnel capacity for the tasks comprising the projects; and

a tenth executable portion capable of directing the modification of the projects, where the productivity measure exceeds the productivity capacity limit for the productivity measurement period, such that the productivity measure over the productivity measurement period is no greater than the productivity capacity limit so as to thereby provide a relatively more efficient utilization of the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule.

64. A computer software program product according to Claim 63 wherein the ninth executable portion is further capable of comparing the productivity measure to a productivity capacity limit, the productivity capacity limit comprising about 80 percent of a historical maximum productivity capacity, over the productivity measurement period.

65. A computer software program product according to Claim 63 further comprising an eleventh executable portion capable of determining the empirical personnel capacity for the tasks comprising the projects with respect to the workload schedule by evaluating at least one of personnel working hours, personnel morale, and project result timeliness with respect to the historical maximum productivity capacity.

66. A computer software program product according to Claim 63 wherein the tenth executable portion is further capable of directing the modification of the arrangement of the projects with respect to the calendar so as to reappportion the total effort equivalences across the intervals.

67. A computer software program product according to Claim 63 wherein the tenth executable portion is further capable of directing the modification of the available resources such that the modified available resources correspond to the total equivalence effort for each interval regardless of the productivity capacity limit.

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68. A computer software program product according to Claim 63 wherein the tenth executable portion is further capable of directing the modification of the total production FTE worker headcount so as to modify the productivity measure with respect to the productivity capacity limit.

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69. A computer software program product according to Claim 63 wherein the tasks are each performed according to a corresponding process and the tenth executable portion is further capable of directing the modification of the processes so as to modify the productivity measure with respect to the productivity capacity limit.

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70. A computer software program product according to Claim 63 wherein the fourth executable portion is further capable of defining a calendar extending for a period corresponding to the workload schedule.

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71. A computer software program product according to Claim 63 wherein the second executable portion is further capable of determining a hands-on work time required for each task such that an automated task is designated as requiring no hands-on work time.

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72. A computer software program product according to Claim 63 wherein the second executable portion is further capable of determining a hands-on work time required for each task by directing a performance of a single representative time measurement of the hands-on work required for each task.

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73. A computer software program product according to Claim 63 wherein the third executable portion is further capable of normalizing each task hands-on work time

with respect to the task hands-on work time of the task requiring the greatest hands-on work time to provide a corresponding unit-less measure of effort that relatively balances variations in effort for each task so as to substantially eliminate a need to continually monitor the hands-on work time required for each task.

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74. A computer software program product according to Claim 63 further comprising a twelfth executable portion capable of determining the historical maximum productivity capacity by dividing the total effort equivalence over a corresponding productivity measurement period in a previous calendar by the total production FTE worker headcount performing the tasks over the corresponding interval in the previous calendar, the total effort equivalence over the corresponding productivity measurement period further comprising an actual accrued total effort equivalence.

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75. A computer software program product according to Claim 63 wherein the tenth executable portion is further capable of, where the productivity measure does not exceed the productivity capacity limit for the productivity measurement period, maintaining the arrangement of the projects according to the start date and the cycle time and with respect to the calendar.

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